

In the Claims

1-49. (Canceled)

50. (Previously presented) An isolated polypeptide comprising the amino acid sequence of SEQ ID NO: 2.

51. (Canceled)

52. (Previously presented) An isolated potassium channel comprising at least one polypeptide comprising the amino acid sequence of SEQ ID NO: 2.

53. (Withdrawn) The isolated potassium channel according to claim 52, wherein said potassium channel is a homomeric channel comprising a plurality of polypeptides.

54. (Previously presented) A purified polynucleotide encoding the polypeptide of SEQ ID NO: 2, or a polynucleotide fully complementary thereto.

55. (Previously presented) The polynucleotide according to claim 54, wherein said polynucleotide comprises the polynucleotide sequence of SEQ ID NO: 1 or a polynucleotide fully complementary thereto.

56. (Previously presented) A vector comprising a polynucleotide encoding the polypeptide of SEQ ID NO: 2.

57. (Canceled)

58. (Previously presented) A host cell comprising a vector that comprises a polynucleotide encoding the polypeptide of SEQ ID NO: 2.

59. (Previously presented) A method of making a polypeptide, said method comprising the steps of culturing a host cell comprising a vector that comprises a polynucleotide encoding the polypeptide of SEQ ID NO: 2 under conditions suitable for the production of a polypeptide comprising SEQ ID NO: 2.

60. (Previously presented) The method according to claim 59, further comprising the step of purifying said polypeptide comprising SEQ ID NO: 2 from the culture.

61. (Canceled)

62. (Withdrawn) A method of screening candidate compounds for a modulator of the KCNQ2 polypeptide comprising the steps of:

- a) contacting a KCNQ2 polypeptide comprising SEQ ID NO: 2 with a candidate compound; and
- b) testing the activity of said KCNQ2 polypeptide in the presence of said candidate compound,

wherein a difference in the activity of said KCNQ2 polypeptide in the presence of said compound in comparison to the activity in the absence of said compound indicates that the compound is a modulator of said KCNQ2 polypeptide.

63. (Withdrawn) The method according to claim 62, wherein said candidate modulator compound is selected from the group consisting of a natural ligand, a small molecule, an antibody, an antisense RNA, an aptamer and a short interfering RNA.

64-86. (Canceled)

87. (Previously presented). A composition comprising at least one polypeptide comprising the amino acid sequence of SEQ ID NO: 2.

88. (Withdrawn) The composition according to claim 87, wherein said composition comprises a plurality of polypeptides.

89. (Withdrawn) The composition according to claim 88, wherein said plurality of polypeptides forms a potassium channel.